

C. REMARKS

Status of the Claims

Claims 1, 3-8, 10-15, and 17-20 are currently pending in the application. Claims 1, 8, and 15 are currently amended. Claims 2, 9, and 16 are canceled.

Amended to Clearly Teach Statutory Subject Matter under 35 USC 101

Claims 15-20 are rejected under 35 USC 101 as being directed to non-statutory subject matter. [Office Action, p. 2] In particular, the Office Action states that “claims 15-20 claim a computer program product in a computer readable medium where the instant specification specifically mentions examples of computer readable medium that include data signals embodied in carrier wave or other propagation medium (paragraph 0026, lines 1-8), which do not fall under statutory subject matter.” [Office Action, p. 2]

Applicants note that paragraph 0025 of the specification of the present invention, teaches that the computer readable medium may take many forms including, but not limited to non-volatile media, volatile media, and transmission media. The specification in paragraph 0022 teach non-volatile media including, for example, a floppy disk, a flexible disk, a hard disk, magnetic tape or any other magnetic medium, a compact disc ROM (CD-ROM) or any other optical medium, punch cards or any other physical medium with patterns of holes, a programmable ROM (PROM), an erasable PROM (EPROM), electrically EPROM (EEPROM), a flash memory, and any other memory chip or cartridge, or any other medium from which computer system **10** can read and which is suitable for storing instructions. Examples of volatile media include dynamic memory such as RAM. Applicants respectfully assert that volatile and non-volatile computer readable media are tangible, fixed media upon which instructions are stored.

In contrast, paragraph 0025 of the specification describes transmission media as including coaxial cables and can also take the form of acoustic or light waves.

Paragraph 0026 of the specification describes that the computer program product can be downloaded as a computer program product, where the program instructions may be transferred from a remote computer to a requesting computer by way of data signals embodied in a carrier wave or other propagation medium via a network link.

Regardless of whether the Examiner's assertion that the example of the computer readable medium downloaded through data signals embodied in a carrier wave or other propagation medium does not fall under statutory subject matter is correct, Applicants amend claim 15 to clearly distinguish that the recording medium upon which the means for performing the invention are recorded, is limited to a volatile or non-volatile recording medium, which is clearly defined in the specification as a tangible medium. Because claim 15 is clearly limited to a computer program product recorded on a tangible medium, claim 15 falls within the bounds of statutory subject matter under 35 USC 101 and the claim should be allowed. In addition, as to claims 16-20 as dependent claims of an independent claim amended to clearly teach allowable statutory subject matter, claims 16-20 should also be allowed by virtue of the dependency.

Lack of Obviousness 35 USC § 103(a)

Claims 1, 3-8, 10-15, and 17-20 are not obvious under Haggar in view of Tokuyo

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haggar et al. (US Publication 2002/0156915)(herein referred to as Haggar) in view of Tokuyo et al. (US Publication 2001/0017862)(herein referred to as Tokuyo). [Office Action, p. 3] Claims 2, 9, and 16 are canceled. Applicants traverse the rejection of claims 1, 3-8, 10-15, and 17-20 in view of the amendments to the claims. Applicants respectfully assert that in view of the amendments, claims 1, 3-8, 10-15, and 17-20 are allowable over Haggar in view of Tokuto and the claims should be allowed.

Claims 1, 8, and 15

Claim 1 currently reads:

1. (Currently Amended) A method for efficient packet desegmentation on a network adapter, comprising:

enabling a network adapter at a computer system to control a flow of a plurality of data packet segments over a bus system to a network protocol stack running at the computer system in each of individual packet segments and desegmented groups of packet segments, wherein each of said plurality of data packet segments is separately received by said network adapter from a network over a plurality of separate connections to a plurality of separate other computer systems, wherein each of said plurality of separate connections is identified by a separate selection of addresses and ports;

buffering a first data packet segment from a single connection from among said plurality of separate connections in the network adapter;

responsive to detecting at least one next data packet segment from said single connection, buffering [[a]] the at least one next plurality of data packet segment[[s]] received at said [[a]] network adapter from said single connection, wherein said single connection is identified by a matching plurality of addresses and ports extracted from each header of each of said first data packet segment and said at least one next [[plurality of]] data packet segment[[s]]; and

responsive to detecting a buffering release condition, releasing said selection of said plurality of data packet segments from said network adapter in a single traversal over said bus system flagged as a desegmented group to said [[a]] network protocol stack for processing flagged desegmented groups of data packet segments together, such that data packet[[s]] segments received from said single connection are efficiently passed to said network stack to be processed together by said network protocol stack.

First, Applicants respectfully assert that the specification of the present application teaches each of the amended elements in claims 1, 8, and 15, therefore no new matter is added through the amendments to the claims.

In particular, as to the element of enabling a network adapter at a computer system to control a flow of a plurality of data packet segments over a bus system to a network protocol stack running at the computer system in each of individual packet segments and desegmented groups of packet segments, wherein each of said plurality of data packet segments is separately received by said network adapter from

a network over a plurality of separate connections to a plurality of separate other computer systems, wherein each of said plurality of separate connections is identified by a separate selection of addresses and ports, the specification clearly teaches these elements throughout, and for example, in paragraphs 0006, 0029, 0036, 0037, and 0038 and Figure 1, elements 40, 102, and 300, Figure 3, Figure 4, and Figure 5, elements 502, 504, 522 and 524.

As to the element of buffering a first data packet segment from a single connection from among said plurality of separate connections in the network adapter, the specification clearly teaches these elements throughout, and for example, in paragraphs 0036, 0038-0041 and Figure 4, element 406 and Figure 5, elements 514 and 524.

In addition, as to the element of responsive to detecting at least one next data packet segment from said single connection, buffering the at least one next data packet segment received at said network adapter from said single connection, wherein said single connection is identified by a matching plurality of addresses and ports extracted from each header of each of said first data packet segment and said at least one next data packet segment, the specification clearly teaches these elements throughout, and for example, in paragraphs 0036 and 0039-0041 and Figure 4, element 406, Figure 5, element 514.

As to the element of responsive to detecting a buffering release condition, releasing said selection of said plurality of data packet segments from said network adapter in a single traversal over said bus system flagged as a desegmented group to said network protocol stack for processing flagged desegmented groups of data packet segments together, such that data packets segments received from said single connection are efficiently passed to said network stack to be processed together by said network protocol stack, the specification clearly teaches these elements throughout, and for example, in paragraphs 0036, 0042, 0043 and 0045-0050 and Figure 4 and Figure 5.

Second, in view of the amendments, Applicants traverse the rejection of claims 1, 8, and 15 and respectfully assert that claims 1, 8, and 15 are not obvious under Haggar in view of Tokuyo. In particular, regardless of whether the previous rejection of claims 1, 8, and 15 is correct, claims 1, 8, and 15 as amended are clearly not taught or suggested by Haggar in view of Tokuyo and there is no motivation or suggestion for modifying Haggar by Tokuyo to teach the claimed elements as is required to establish a *prima facie* case of obviousness under 35 USC. 103(a). *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438.

In particular, in view of the amendments, claims 1, 8, and 15 teach a method, system, and program for a network adapter which receives data packet segments from a network, desegments the data packet segments received from a same connection over the network as detected from matching addresses and ports specified in the data packet segments, and passes the desegmented data packet segments received from a same connection to the network protocol stack, such that the network protocol stack running at a computer system receiving the desegmented data packet segments can process the desegmented data packet segments together, rather than processing each data packet segment separately.

In particular, claims 1, 8, and 15 teach enabling a network adapter at a computer system to control a flow of a plurality of data packet segments over a bus system to a network protocol stack running at the computer system in each of individual packet segments and desegmented groups of packet segments, wherein each of said plurality of data packet segments is separately received by said network adapter from a network over a plurality of separate connections to a plurality of separate other computer systems, wherein each of said plurality of separate connections is identified by a separate selection of addresses and ports. Clearly, claims 1, 8, and 15 teach a network adapter which controls the upstream flow of data packet segments received from a network to a network protocol stack running at a computer system, which is not taught or suggested by Haggar in view of Tokuyo.

In addition, in particular, claims 1, 8, and 15 teach enabling a network adapter at a computer system to control a flow of a plurality of data packet segments over a bus system to a network protocol stack running at the computer system in each of individual packet segments and desegmented groups of packet segments, wherein each of said plurality of data packet segments is separately received by said network adapter from a network over a plurality of separate connections to a plurality of separate other computer systems, wherein each of said plurality of separate connections is identified by a separate selection of addresses and ports and responsive to detecting at least one next data packet segment from said single connection, buffering the at least one next data packet segment received at said network adapter from said single connection, wherein said single connection is identified by a matching plurality of addresses and ports extracted from each header of each of said first data packet segment and said at least one next data packet segment. Clearly, claims 1, 8, and 15 teach a network adapter which identifies data packet segments received over a same connection, which can then be grouped, based on matching the extracted addresses and ports from each of the data packet segments. In the Office Action, the Examiner relies on Tokuyo as describing “a plurality of addresses and ports located in the header of the IP packets including the four-tuple, src-port, dst-port, dst-ip and src-ip.” [Office Action, p. 3] Regardless of whether Tokuto describes “a plurality of addresses and ports located in the header of IP packets”, no portion of Tokuyo describes extracting the plurality of addresses and ports located in the header of IP packets by a network adapter in order for the network adapter to identify data packet segments sent over a network through a same connection identified by a set of addresses and ports. In addition, paragraph 0010 of Tokuyo, as cited in the Office Action, describes a router, for properly routing a data packet segment across a network, detecting the addresses and ports of a data packet segment. There is no suggestion or motivation for modifying Haggar by Tokuyo’s router between network adapters to teach a network adapter that detects data packet segments received from a same connection between the network adapter and

another network adapter as identified by extracting the same addresses and ports identifying the connection from the data packet segments.

Further, claims 1, 8, and 15 teach responsive to detecting a buffering release condition, releasing said selection of said plurality of data packet segments from said network adapter in a single traversal over said bus system flagged as a desegmented group to said [[a]] network protocol stack for processing flagged desegmented groups of data packet segments together, such that data packet segments received from said single connection are efficiently passed to said network stack to be processed together by said network protocol stack. Clearly, claims 1, 8, and 15 teach a network adapter which releases groups of desegmented data packet segments to a network protocol stack that receives data packet segments individually from the network adapter, but is also adapted to process, together, a flagged desegmented group of segments received together, and process the flagged group together, which is not taught or suggested by Haggar in view of Tokuyo.

Therefore, because at least one element of claims 1, 8, and 15 is not taught or suggested by Haggar and Tokuyo, separately or in combination, a prima facie case of obviousness is not proven through Haggar and Tokuyo under 35 USC 103(a) and the claims should be allowed.

Claims 3-7, 10-14, and 17-20

Claims 3-7, 10-14, and 17-20 are dependent upon independent claims 1, 8, and 15, which are amended to clarify that these claims are allowable. Therefore, claims 3-7, 10-14, and 17-20 are allowable by virtue of their dependency upon, and for at least the same reasons as, claims 1, 8, and 15.

Newly Added Claims

Claims 21, 22, and 23 are newly added method, system, and computer program product claims dependent upon independent claims 1, 8, and 15,
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respectively. As dependent claims of independent claims 1, 8, and 15 which are amended to clarify that the claims are allowable, claims 21, 22, and 23 are also allowable by virtue of the dependency. In addition, Applicants respectfully assert that Haggar in view Tokuyo does not teach or suggest a network protocol stack for processing groups of data packet segments together and performing functions performed for each data packet segment only once for the flagged group of data packet segments, including executing an incoming packet processing code, performing a direct memory access, and performing a protocol control block search, therefore claims 21, 22, and 23 are also separately allowable as not obvious in view of Haggar and Tokuyo.

Each of the elements of claims 21, 22, and 23 are taught in the specification, therefore no new matter is added through the amendments to the claims. In particular, as to the teaching of a network protocol stack which processes flagged groups of data packet segments and in particular to a network protocol stack responsive to receiving the flagged data packet segments together, for processing said flagged data packet segments together by only executing an incoming packet processing code executed for each incoming data packet segment once for said flagged data packet segments, by only performing a direct memory access performed for transferring each packet segment to a memory block once for said flagged data packet segments, and by only performing a protocol control block search to detect a connection status for the connection of each data packet segment once for detecting a status of said single connection of said flagged data packet segments in paragraphs 0006, 0036, and 0043.

Conclusion

In view of the foregoing, withdrawal of the rejections and the allowance of the current pending claims is respectfully requested. If the Examiner feels that the pending claims could be allowed with minor changes, the Examiner is invited to telephone the undersigned to discuss an Examiner's Amendment.

No extension of time is believed to be necessary. If, however, an extension of time is required, the undersigned hereby authorizes the Commissioner to charge any fees for this extension to IBM Corporation Deposit Account No. 09-0447.

Respectfully submitted,

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